NON-PUBLIC?: N
ACCESSION #: 8911010105
LICENSEE EVENT REPORT (LER)

FACILITY NAME: South Texas, Unit 2 PAGE: 1 OF 3

DOCKET NUMBER: 05000499

TITLE: Reactor Trip Due to a Turbine Trip Caused By an Inverter Failure
EVENT DATE: 09/22/89 LER #: 89-023-00 REPORT DATE: 10/23/89

OTHER FACILITIES INVOLVED: DOCKET NO: 05000

OPERATING MODE: 1 POWER LEVEL: 094

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR SECTION:
50.73(a)(2)(iv)

LICENSEE CONTACT FOR THIS LER:
NAME: Charles Ayala - Supervising Licensing TELEPHONE: 512-972-8628

COMPONENT FAILURE DESCRIPTION:
CAUSE: A SYSTEM: EE COMPONENT: INVT MANUFACTURER: E209
REPORTABLE NPRDS: NO

SUPPLEMENTAL REPORT EXPECTED: NO

ABSTRACT:

On September 22, 1989, Unit 2 was in Mode 1 at 94 percent power. At 0201 hours a turbine trip occurred on loss of power to the four main turbine auto stop solenoids. The reactor tripped on the turbine trip. A main feedwater isolation and auxiliary feedwater actuation occurred on low average Reactor Coolant System temperature as expected. The unit was stabilized in Mode 3 with no unexpected post-trip transients. The cause of this event was failure of a non safety-related inverter which interrupted power to the main turbine auto stop solenoids. A contributing cause was that the design did not provide for the single failure of a power feed. The inverter has been repaired and returned to service. The power feed design has been changed to add an additional power source.

END OF ABSTRACT

DESCRIPTION OF OCCURRENCE:

On September 22, 1989, Unit 2 was in Mode 1 at 94% percent power. At 0201 hours, a turbine trip occurred on loss of power to the four main turbine auto stop solenoids. The reactor tripped on the turbine trip. A main feedwater isolation and auxiliary feedwater actuation occurred on low average Reactor Coolant System temperature as expected. The control room operators closed the Main Steam Isolation Valves to prevent excessive cooldown. The unit was stabilized in Mode 3 with no unexpected post-trip transients.

The Main Turbine Emergency Trip Cabinet contains the auto stop solenoids which vent turbine trip fluid to initiate a turbine shutdown. These solenoids are normally powered by an inverter through an automatic transfer switch. In the event of an inverter failure, the automatic transfer switch shifts the power supply to an alternate source; however, this is a break-before-make transfer which results in a momentary loss of power. The transfer does not take place quickly enough to prevent a turbine trip.

CAUSE OF EVENT:

The cause of this event was the failure of a capacitor on the DC to DC converter board in the non safety-related inverter. A contributing factor was that redundant power feeds were not supplied to the Main Turbine Emergency Trip Cabinet.

ANALYSIS OF EVENT:

Reactor trip and Engineered Safety Features actuation is reportable pursuant to 1OCFR50.73(a)(2)(iv). The plant was brought to a stable condition in Mode 3 with no unexpected post-trip transients. No safety injection actuation occurred as a result of this event.

CORRECTIVE ACTION:

The following corrective actions are being taken as a result of this event:

1. The inverter has been repaired and returned to service.

2. The design of the power feeds to the Main Turbine Emergency Trip Cabinet has been changed to add an independent source of power. In the event of the loss of power from either source, a turbine trip will not occur.

ADDITIONAL INFORMATION:

The inverter is a 25 KVA, single phase, 120 volt AC unit manufactured by Elgar Corporation. The model number is INV 253-1-105.

There have been two previous events reported regarding the failure of this same model of inverter:

LER 88-021 (Unit 1) reported an inverter failure which caused numerous ESF actuations.

LER 89-020 (Unit 2) reported an inverter failure which cause the simultaneous tripping of three steam generator feedwater pumps resulting in a manual reactor trip.

A study has been initiated to address the reliability of the secondary plant in response to the recent Unit 2 trips. This study includes the turbine trip controls.

The Light
Company PO. Box 1700 Houston, Texas 77001 (713) 228-9211
Houston Lighting & Power

October 23, 1989
ST-HL-AE- 3270
File No.: G26
10CFR50.73

U. S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, DC 20555

South Texas Project Electric Generating Station
Unit 2
Docket No. STN 50-499
Licensee Event Report 89-023 Regarding a Reactor
Trip Due to a Turbine Trip Caused by an Inverter Failure

Pursuant to 1OCFR50.73, Houston Lighting & Power (HL&P) submits the attached Licensee Event Report 89-023 regarding a reactor trip due t
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turbine trip caused by an inverter failure. This event did not have any adverse impact on the health and safety of the public.

If you should have any questions on this matter, please contact Mr. C. A. Ayala at (512) 972-8628.

R. W. Chewning
Vice President
Nuclear Operations

RWC/BEM/eg

Attachment: LER 89-023, South Texas, Unit 2

Houston Lighting & Power Company

ST-HL-AE-3270
File No.: G26
Page 2

cc:

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